

Ohio; 3d, Ga., Neb., N. Y., Ohio, Tx.; 4th, Fla., Ala., Ill., Neb., N. C., N. H.; 5th, N. Y., 6th, Ill., Iowa, Ky., Neb.; 7th, Cal., Dak., Minn., Neb., N. Y., Ohio; 8th, Conn., Del., N. Y., Ohio, S. C.; 11th, Dak., N. H.; 12th, Ala., Ill., Kan., La., Maine, Mass., N. H., N. Y., Pa.; 13th, Ill., Ky., Ohio, Tx.; 14th, Ind., Iowa, Kans., Maine, N. H., N. Y., Ohio; 15th, Ala., Mich., N. Y., Ohio; 16th, Ga., Ohio; 17th, Ill., N. J.; 18th, Mass., N. H., N. J., N. Y., Ohio, Wis.; 19th, Ill., Mass.; 20th, Conn., Mich., Ohio; 21st, Conn., Mass.; 22d, Ill.; 23d, Ill., Mass., N. H., N. Y.; 24th, Col., Mass., N. H., Conn., R. I.; 25th, Ky., Mich., N. H.; 26th, Ill., Kans., Ky., Mo., Neb.; 27th, Conn., Ill., Iowa, Ky., Maine, N. Y., Ohio, S. C.; 28th, Ill., Iowa, Maine, N. H., N. Y., Ohio, Wis.; 29th, Ill., Ind., Kans., Mich., Ohio, S. C.; 30th, Ky., N. C., Ohio.

Lunar halos were observed on the 1st in Canada; 3rd, Ohio; 13th, Ind.; 16th, Ga., Mass., Pa.; 17th, Conn., Del., Ga., Ill., Ind., Md., Minn., Ohio, Va., D. C., 18th, Dak., Ga., Kan., Ill., La., Mass., Minn., Neb., Ohio, S. C.; 19th, Ill., Kan., Minn., S. C., Utah; 20th, Ill., La., Mich., Ohio; 21st, Ga., Ill., Iowa, S. C., Va.; 22nd, Ala., Ind., Iowa, Ill., Ohio, Tex., Va.; 23rd, Conn., Ind., Me., Minn., Ohio, S. C.; 25th, R. I.; 26th, Ala., Cal., Ga., Ky., Ohio; 27th, Ind.; 28th, N. Y.; 29th, Ohio; 30th, Ill., Ohio.

Mirage was observed at Barnegat N. J., and Atlantic City, N. J., on the 25th.

MISCELLANEOUS PHENOMENA.

Zoological.—BOTANICAL.—Harvesting began as follows: *Barley*, 18th, Jacksonburg, Ohio; 19th, Vevay, Ind.; 30th, all in at Clarksville, Tex.: *Oats*, 30th, all in at Clarksville, Tex.; 17th, heading out at Cresswell, Kan. *Rye*, 27th, Vevay, Ind.; 30th, Wappinger's Falls, N. Y. *Wheat*, 8th, Carbondale, Ill.; 12th, winter wheat heading out, Cresswell, Kan.; 17th, spring wheat heading out at Cresswell, Kan.; 17th, Alto Vista, Va.; 18th, Wappinger's Falls, N. Y.; 27th, Vevay, Ind., and Salem, N. J.; 28th, Jacksonburg, Ohio; 29th, Keokuk, Iowa; 30th, Clarksville, Tex., all in; 30th, Ringgold, beginning; 30th, Ruggles, nearly ripe. *Clover*, 1st, Wantoma, Wis., in bloom; 25th, Jacksonburg, Ohio. *Hay*, 18th, Salem, N. J.; 25th, Wappinger's Falls, N. Y.

FRUITS.—Blooming and ripening, are reported as follows: *Blackberries*, in bloom, 5th, Cornish, Me.; 7th, Palermo, N. Y. *Cherries*, ripe, 15th, Wappinger's Falls, N. Y. *Currants*, ripe, 18th, Wappinger's Falls, N. Y.; Augusta, Ill., 28th. *Grapes*, blooming, 4th, Augusta, Ill.; 18th, Contocookville, N. H.; *Concord*s ripe, in good exposures, 28th, Lake Charles, La. *Peaches*, ripe, 20th, Brookhaven, Miss. *Peas*, in bloom, 6th, Jacksonburg, Ohio; ripe, 7th, Wappinger's Falls, N. Y.; 15th, Starkey, N. Y.; 29th, Jacksonburg, Ohio. *Potatoes*, ripe, 29th, Jacksonburg, Ohio. *Mulberries*, ripe, 20th, Augusta, Ill. *Raspberries*, ripe, 26th, Wappinger's Falls, N. Y.; 27th, Augusta, Ill. *Strawberries*, ripe, 2d, Augusta, Ill.; 10th, Gardiner, Me., (two weeks early); 10th, West Charlotte, Vt.; 13th, Starkey, N. Y.; 18th, Contocookville, N. H.

FLOWERS AND TREES.—*Daisies*, flowering, 14th, Somerset, Mass. *Locust tree*, in bloom, 5th, Somerset, Mass. *Roses*, in bloom, 3d, Wappinger's Falls, N. Y. *Syringia*, in bloom, 10th, Somerset, Mass. *Tulip tree*, in bloom, 3d, Richmond, Ind. *Water lilies*, in bloom, 5th, Fall River, Mass. *Yarrow*, in bloom, 17th, Palermo, N. Y.

BIRDS.—First seen as follows: *Cuckoo* 6th, and *Kingbird* 12th at Monticello, Iowa.

INSECTS.—*Chintz Bugs* were first seen, 1st, at Guttenberg, Iowa. *Cat-worms*, myriads at Sycotte station, near Chicago. *Bears*, 18th, Summit, Col. *Crickets*, 2nd, at Somerset, Mass. *House Flies*, 13th, Summit, Col.; 29th, Richmond, Ind. *Katydid*, 19th, Brookhaven, Miss. *Fire Flies*, 1st, Jacksonburg, Ohio; 7th, Augusta, Ill.; 8th, Freehold, N. J.; Woodstock, Vt.; 10th, Palermo, N. Y.; 13th, Corning, Mo.; 14th, Linden, N. J.; 15th, Newark, N. J. *Colorado Beetle*, 14th, Linden, N. J.; few; 20th, Riley, Ill., hatching; 24th, Starkey, N. Y.; 26th, Blooming Grove, Pa., few; 30th, Ringgold, Ohio, not destructive, Waltham, Mass., very destructive, Dunbarton, N. H., slight damage.

Locusts.—Special reports in reply to the circular of the U. S. Entomological Commission afford the following extracts: Freckericksburg, Tex., have visited this section regularly in April and September of each year since 1870, leaving after four or six weeks; were this year less numerous and destructive than formerly; left the first week of May. Eagle Pass, Texas, were numerous and destructive in September, 1873; eggs hatched in February and were destructive in May, 1874; another destructive swarm in September, 1875; eggs hatched in February and young ones left in May, 1876, doing little damage; no new swarms in 1877; a few hatched out from old eggs. Cambridge, Texas, a few stopped here in July, 1876, on their way southwestward; a few arrived May 7, 1877, and left within 24 hours. Indianola, Texas, locusts have never been seen herabouts within 30 miles of the Gulf coast. Leavenworth, Kan., immense swarms of locusts arrived 10th to 15th of August, 1874, and left in about six days, followed by native grasshoppers; many young ones hatched out, and were full fledged 25th May, 1875: visited by very few in 1876. Dodge City, Kan., grasshoppers (locusts?) frequent from April to September, 1876; arrived May 21, 1877, at 10:30 a. m., and continued flying to the northeast until the 22nd, 5 p. m.; deposited no eggs. Denver, Col., was visited in 1864, '65, '66, '73, '74, '75, '76, (July 30th;) many young hatched in 1877, but died early. Breckenridge, Minn., visited in 1874, '75, '76; hatching rapidly May 15th to 31st, 1877. Corsicana, Texas, swarms arrived September 21, 1876, staying five days, and October 1st, staying nine days;

young hatched out 1877, from February 5th to 20th; departed between 1st and 21st of May. Special notes for June are as follows: Nebraska—Plattsmouth, not destructive but plentiful; North Platte, 15th, few flying north; Howard, hatching until June 15th, flying 20th to 30th, little damage. Dakota—Bismarck, 21st, 28th, 29th, flying NW. Colorado—Denver, 30th, very few have hatched. Kansas—Baxter Springs, 12th to 30th, flying NE., plenty remain in cold soils. Iowa—Vail, 30th, began to fly; Tabor, 30th, all gone. Missouri—Corning, plenty but not destructive. New Jersey—South Orange, 30th, all gone, little damage; Newark, 15th, slight damage; Vineland, 1st, plentiful, 14th, very few. D. C.—Washington, plentiful first ten days. New York—Starkey, 25th, seen; Wappinger's Falls, 1st, hatching, 13th to 18th, destructive, 26th, dying. Virginia—Alto Vista, 15th, all gone.

Balloon Ascensions.—Some information as to the condition of the atmosphere on June 18th and 19th, is given by the observations made during two balloon voyages starting from Nashville. The path of the balloon is shown on the accompanying Chart IV. The observations will be presented in full in the annual report of the Chief Signal Officer; they show that the bases of the cumulus clouds were formed at an altitude corresponding to the pressure of 25.50 inches at 5:40 p. m., but of 27.85 inches at 8 a. m., the temperature of their bases being, respectively, 79° and 78°. The highest point attained was at pressure 16.65 inches (where the temperature was 43° and the wet bulb thermometer read 36) on June 19th, 11:55 a. m., at which time the record at Nashville Signal Service station (altitude 504.2 feet) was 29.58, 86.5, 75.5, respectively.

Polar Bands.—Guttenberg, Nov. 22nd; Carthagena, Ohio, 1st, 3rd, 13th, 22nd, 29th; Denver, Col., 5th, 12th, 25th.

Sunsets.—The characteristics of the sky, as indicative of approaching fair or foul weather, have been observed daily, at sunset, at all Signal Service stations. The monthly means, from 97 stations, show that 74 doubtful cases, or blanks, were recorded, and that out of the remaining 2,832 cases 2,162, or 76.3 per cent. have been followed by the expected weather.

Forest fires prevailed in northern Michigan during the first 10 days of the month, being generally extinguished by rain on the 9th. Fire or smoke was also reported as follows: 1st, Greenville, N. C.; 3d, 4th, 5th, Kittyhawk, N. C., (in marshes); 4th, Southington, Conn.; 6th, Hennepin, Ill.; 15th, 23d, Detroit, Mich.; 23d, West Waterville, Me.; 30th, Santa Fe, N. Mex., (for several days.)

Meteors were observed as follows: 1st, Davenport, Iowa; 3d, Carthagena, Ohio; 11th, Monticello, Iowa; 12th, Mt. Auburn, Ohio; Louisville, Ky.; Indianapolis and Fort Wayne, Ind., and Detroit, Mich.; 13th, Litchfield, Mich., (10 p. m.) Bellefontaine, Ohio; 14th, Monticello, Io., Philadelphia, Pa.; 15th, Carbondale, Ill., (NW to SE) Mt. Sterling, Ill.; 16th, Waterburgh, N. Y.; 17th, Monticello, Io.; 19th, Merom, Ind.; 20th, Merom, Ind.; 21st, Leavenworth, Kan.; 24th, Davenport; 25th, Point Pleasant, La.; 26th, Point Pleasant, La.; 27th, Brook Haven, Miss.; 28th, Monticello, Io., Starkey, N. Y.; 29th, Point Pleasant, La., (zenith to SE, and meteoric shower;) Brook Haven, Miss., Freehold, N. J., (11 p. m. loud explosion,) Newark, N. J.; 30th, Summit, Col., Brook Haven, Miss., Salem, N. J., (10 p. m.) Melissa, Tx., (8 p. m.) Bloomfield, Wis., (10:40 p. m., followed by explosion in 3 to 5 minutes.

Zodiacal light.—Carbondale, Ill., 19th to the 28th. Savannah, Ga., 1st, 2nd, 3rd, 6th and 30th.

Earthquakes.—3rd, near Stanford, Ky., small local disturbance. 11th, volcanic disturbance 60 miles from Yuma, near Flowing Well, Cal. 18th, Milwaukee, 7:30 p. m.; water in Lake Michigan fell two feet in one-half hour, and rose again much more quickly.

SOLAR PHENOMENA.

Sun-spots.—The following observations, made by Mr. D. P. Todd, upon the spots on the sun, have been kindly communicated by Rear-Admiral John Rodgers, U. S. N., Superintendent of the Naval Observatory:

June, 1877.	No. of new—		Disappeared by solar rotation.		Reappeared by solar rotation.		Total number visible.		Remarks.
	Groups	Spots.	Groups	Spots.	Groups	Spots.	Groups	Spots.	
11th, 5 p. m...	1	13±	0	0	0	0	1	13±	Spots very small and closely aggregated.
13th, 9 a. m...	0	0	0	0	0	0	0	0	
19th, 9 a. m...	0	0	0	0	0	0	0	0	
20th, 9 a. m...	0	0	0	0	0	0	0	0	
21st, 10 a. m...	0	0	0	0	0	0	0	0	
22nd, 10 a. m...	0	0	0	0	0	0	0	0	Several prominent groups of sizeable faculae.
23rd, 8 p. m...	0	0	0	0	0	0	0	0	
23rd, 6 p. m...	1	2	0	0	0	0	1	2	
24th, 1 p. m...	0	0	0	0	0	0	1	2	
25th, 8 a. m...	0	3	0	0	0	0	1	5	
26th, 10 a. m...	0	1	0	0	0	0	1	6	Solar disk almost completely mottled with faculae, many of them large.
27th, 9 a. m...	0	0	0	0	0	0	0	0	
29th, 6 p. m...	1	2	0	0	0	0	1	2	
30th, 9 a. m...	0	0	0	0	0	0	1	2	Several large faculae; one of the spots is penumbral—quite without dark or well-defined nucleus.